Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-15. (Cancelled)

16. (Currently Amended) A electro-chemical mechanical polishing apparatus, comprising:

a rotatable platen to support a polishing pad;

a weir to contain an electrolyte on the polishing pad;

a carrier head to hold a substrate against the polishing pad;

~~a first electrical contact for connection to~~ a first electrode for contacting the polishing electrolyte on the polishing pad, the first electrode positioned on the platen and substantially spanning the platen and having an aperture therethrough;

a first electrical contact connected to the first electrode;

a second electrical contact for connection to second electrode for contacting the substrate in contact with the polishing pad;

a voltage source to apply a voltage between the first electrical contact and the second electrical contact;

a housing positioned partially in a cavity in the platen and having a portion extending above a top surface of the platen and through the aperture in the first electrode; and

an eddy current sensor secured to the platen in the housing, the eddy current sensor including a coil to generate a magnetic field to induce eddy currents in a metal layer in the substrate while the sensor is positioned adjacent the substrate.

17-18. (Cancelled)

19. (Currently Amended) The apparatus of claim [[18]] 16, wherein the housing includes a projection that extends above the top surface of the platen.

20. (Original) The apparatus of claim 19, wherein the eddy current sensor includes a core, and at least a portion of the core is positioned in the projection.

21. (Currently Amended) The apparatus of claim [[18]] 16, further comprising a polishing pad positioned on the platen, the polishing pad including an aperture aligned with the housing.

22. (Original) The apparatus of claim 21, wherein the housing extends partially into the aperture.

23. (Original) The apparatus of claim 21, further comprising a fluid seal between the platen and the housing.

24. (Original) The apparatus of claim 23, wherein the fluid seal comprises an o-ring.

25. (Currently Amended) The apparatus of claim 21, wherein the second electrode is provided by a conductive polishing layer in the polishing pad, and the aperture is formed through the second electrode.

26. (Original) The apparatus of claim 25, wherein the housing extends at least partially through the aperture in the second electrode.

27-28. (Cancelled)

29. (Currently Amended) The apparatus of claim [[28]] 21, wherein the first electrode is positioned between the platen and a non-conductive polishing layer.

30. (Original) The apparatus of claim 16, further comprising a plurality of an eddy current sensors secured to the platen, the sensors spaced at substantially equal radial distances from the axis but at different angular positions about the axis, each of the sensors being substantially identical, each eddy current sensor including a coil to generate a magnetic field to induce eddy currents in a metal layer in the substrate while the sensor is positioned adjacent the substrate.

31-74. (Cancelled)

75. (New) The apparatus of claim 21, wherein the aperture extends entirely through the polishing pad.

76. (New) The apparatus of claim 75, further comprising a fluid seal between the platen and the housing.

77. (New) The apparatus of claim 21, wherein the second electrode is provided by a conductive element embedded in an insulative polishing layer in the polishing pad.

78. (New) The apparatus of claim 21, wherein the second electrode is provided by a conductive element extending through a hole in the polishing pad.